

**CLAIMS**

What is claimed is:

- 1     1.    A process for forming a cured fluoroelastomer film comprising the steps of:  
2                providing a fluoroelastomer latex;  
3                adding an organic peroxide curing agent and coagent to the latex to  
4                form a curable coating composition;  
5                forming a film with the curable coating composition; and  
6                curing the film at elevated temperature.
  
- 1     2.    The process of claim 1, where the organic peroxide curing agent is a dialkyl  
2                peroxide, peroxyester, diacyl peroxide, ketone peroxide, peroxydicarbonate,  
3                hydroperoxide, peroxyketal, or mixture thereof.
  
- 1     3.    The process of claim 2, where the dialkyl peroxide curing agent is a dicumyl  
2                peroxide, 2,5-dimethyl-2,5-di-(*t*-butylperoxy)hexane, *t*-butyl cumyl peroxide,  $\alpha,\alpha'$ -  
3                bis(*t*-butylperoxy)diisopropylbenzene, di-*t*-butyl peroxide, 2,5-dimethyl-2,5-di-(*t*-  
4                butylperoxy)hexyne-3, or a mixture thereof.
  
- 1     4.    The process of claim 2, where the peroxyester curing agent is  $\alpha$ -cumyl peroxy-  
2                neodecanoate, 1,1-dimethyl-3-hydroxy-butyl peroxyneodecanoate,  $\alpha$ -cumyl  
3                peroxy-heptanoate, *t*-amyl peroxyneodecanoate, *t*-amyl peroxy-pivalate, *t*-butyl  
4                peroxyneodecanoate, *t*-butyl peroxy-pivalate, 1,1-dimethyl-3-hydroxy-butyl peroxy  
5                2-ethylhexanoate, 2,5-dimethyl 2,5 di(2-ethylhexanoylperoxy)hexane, *t*-amyl  
6                peroxy 2-ethylhexanoate, *t*-butyl peroxy 2-ethylhexanoate, *t*-butyl peroxy  
7                isobutyrate, *t*-butyl peroxyacetate, *t*-amyl peroxyacetate, *t*-butyl perbenzoate, *t*-  
8                amyl perbenzoate, di-*t*-butyl diperoxyphthalate, oo-*t*-butyl o-isopropyl  
9                monoperoxycarbonate, 2,5-dimethyl 2,5-di(benzoylperoxy)hexane, oo-*t*-butyl 1-(2-  
10                ethylhexyl)monoperoxycarbonate, oo-*t*-amyl o-(2-ethylhexyl)  
11                monoperoxycarbonate, or a mixture thereof.
  
- 1     5.    The process of claim 2, where the diacylperoxide curing agent is  
2                diisononanoyl peroxide, decanoyl peroxide, lauroyl peroxide, succinic acid

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3 peroxide, benzoyl peroxide, or mixture thereof; and, where the peroxydicarbonate  
4 curing agent is di(n-propyl)peroxydicarbonate, di(sec-butyl)peroxydicarbonate,  
5 di(2-ethylhexyl)peroxydicarbonate, or a mixture thereof.

1 6. The process of claim 2, where the ketone peroxide curing agent is 2,4-  
2 pentanedione peroxide; and, where the hydroperoxide curing agent is 2,5-  
3 dihydroperoxy-2,5-dimethylhexane, cumene hydroperoxide, *t*-butyl hydroperoxide,  
4 *t*-amyl hydroperoxide, or a mixture thereof.

1 7. The process of claim 2, where the peroxyketal curing agent is n-butyl-4,4-di-  
2 (*t*-butylperoxy)valerate, 1,1-di-(*t*-butylperoxy)-3,3,5-trimethyl-cyclohexane, 1,1-di-  
3 (*t*-butylperoxy)-cyclohexane, 1,1-di-(*t*-amylperoxy)-cyclohexane, 2,2-di-(*t*-butyl-  
4 peroxy)-butane, ethyl-3,3-di-(*t*-butylperoxy)-butyrate, *t*-butyl peroctoate, 2,2-di-(*t*-  
5 amylperoxy)propane, ethyl 3,3-di-(*t*-amylperoxy)-butyrate, or a mixture thereof.

1 8. The process of claim 1, where the coagent is a polyunsaturated compound.

1 9. The process of claim 8, where the coagent is triallyl isocyanurate, triallyl  
2 cyanurate, trivinyl isocyanurate, trimethallyl isocyanurate, tris(diallylamine)-s-  
3 triazine, triallyl phosphite, N,N-diallyl acrylamide, hexa-allyl phosphoramidate,  
4 N,N,N',N'-tetra allyl terephthalamide, N,N,N',N'-tetra allyl malonamide, 2,4,6-  
5 trivinyl methyltrisiloxane, and tri(5-norbornene-2-methylene)cyanurate, or  
6 mixtures thereof.

1 10. The process of claim 1, where the fluoroelastomer contains at least one unit  
2 deriving from a bromine-containing olefin, an iodine-containing olefin, or both.

1 11. The process of claim 1, where the fluoroelastomer is a copolymer, terpolymer,  
2 or tetrapolymer having polymeric units deriving from tetrafluoroethylene,  
3 chlorotrifluoroethylene, vinyl fluoride, vinylidene fluoride, hexafluoropropylene,  
4 or various combinations or subcombinations thereof, and optionally bromine-  
5 containing olefins, iodo moieties, or combinations or subcombinations thereof.

1 12. The process of claim 11, where the fluoroelastomer is a terpolymer of  
2 vinylidene fluoride, hexafluoropropylene, and tetrafluoroethylene.

1 13. The process of claim 11, where the fluoroelastomer is a tetrapolymer of  
2 vinylidene fluoride, hexafluoropropylene, tetrafluoroethylene and bromine-  
3 containing olefin.

1 14. The process of claim 11, where the fluoroelastomer latex contains from about  
2 60 to about 73 percent by weight fluoroelastomer on a solids basis.

1 15. The process of claim 1, where said step of adding an organic peroxide curing  
2 agent includes adding from about 1 to about 10 parts by weight net curing agent  
3 per 100 parts by weight fluoroelastomer.

1 16. The process of claim 1, where step of adding a coagent includes adding from  
2 about 1 to about 10 parts by weight net coagent per 100 parts by weight  
3 fluoroelastomer.

1 17. The process of claim 1, further comprising the step of drying the film.

1 18. The process of claim 1, where said step of curing occurs at about 130° to  
2 about 150°C for about 1 hour.

1 19. A curable fluoroelastomer coating composition comprising:  
2 a fluoroelastomer latex, from about 1 to about 10 parts by weight of a  
3 peroxide curing agent per 100 parts by weight fluoroelastomer, from about  
4 1 to about 10 parts by weight of a peroxide cure coagent per 100 parts by  
5 weight fluoroelastomer.

1 20. A fluoroelastomer film prepared by the steps comprising:  
2 providing a fluoroelastomer latex;

3           adding an organic peroxide curing agent and coagent to the latex to  
4       form a curable coating composition;  
5           forming a film with the curable coating composition; and  
6           curing the film at elevated temperature.